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U. S. DEPARTMENT OF AGRICULTURE  
BELTSVILLE BRANCH

# B P I S A E

## RESEARCH ACTIVITIES

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PLANT INDUSTRY STATION, BELTSVILLE, MD.

MAY 1950

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### Improved Small Grains for the South

Prospects of better small grain varieties for the South are considerably brightened by the initiation of a cooperative research program in which this Bureau will have an important part. This RMA project is the first large-scale scientific effort to improve varieties of oats, wheat, and barley specifically for southern conditions.

During the past 10 years there has been a shift to small grains from the row crops, which in 1940 occupied about 60 percent of the more than 46 million acres of tillable land east of the Mississippi River. Southern farmers, particularly in the Gulf Coast region from Florida to Texas, have sought to use oats, wheat, and barley not only for feed but for hay and winter pasture. But lack of suitable varieties has resulted in heavy losses from disease. Helminthosporium leaf spot diseases have been especially destructive in oats. Leaf spot and root rot have been major problems in wheat and barley.

In the expanded research program, Dr. K. S. Quisenberry, head of the Division of Cereal Crops and Diseases, has added three plant pathologists to the Division staff and assigned them to southern locations to make a thorough study of the nature and extent of diseases in small grains in the region. John G. Moseman, stationed at Raleigh, N. C., Dr. R. W. Earhart at Gainesville, Fla., and Thomas E. Summers at State College, Miss., will work on disease phases of the research in cooperation with plant breeders either now assigned to the study or to be appointed.

The project permits the screening of large collections of domestic and foreign varieties of wheat, barley, and oats for resistance to diseases prevalent in the South, including specific races. It will also permit the identification of other races believed present. Breeding for resistance to the various diseases by approved plant breeding methods will then be undertaken as rapidly as possible.



### Dedication of Gift Plantings Held at Arboretum

Cryptomerias, cedars, and Himalaya pine--financed by a gift from the Garden Club of America and planted in three valleys of the National Arboretum--were dedicated in a brief ceremony April 27.

Taking part were Secretary Brannan, B. Y. Morrison, acting director of the Arboretum, Frederic P. Lee, chairman of the advisory council, and Mrs. Herman G. Place, president, and Mrs. Gilbert Hitchcock, chairman of the national capitol committee of the Garden Club of America.

This is the third group of ornamental plantings to be set out under the development plans for the Arboretum drawn up by Mr. Morrison, other Bureau officials, and the National Advisory Council.

The first of the plantings--8 acres of hybrid azaleas created by Mr. Morrison and his associates at the Plant Introduction Garden at Glenn Dale--cover one hillside and make a magnificent display.

The second group of plantings consists of about 6,000 azalea plants of approximately 130 varieties presented to the Arboretum by the Holland Plant Growers Association in 1948.

### Cotton Essential in Economy of Southeast

So long as the farm population in the Southeast remains at a high level in relation to land resources, improvement in cotton offers one of the best opportunities for raising farm incomes, Dr. Charles R. Sayre, head of the Division of Cotton and Other Fiber Crops and Diseases, told an Alabama Statewide Conference recently.

Reporting on advances in research, he said:

1. Cottons are being developed with strikingly superior fiber properties.
2. The use of oils as weed killers and chemical defoliants causing plants to shed their leaves before harvest shows great promise.
3. Mechanization is lowering production costs.
4. Some of the new insecticides are giving spectacular results.

Even though production of improved cottons at lower costs requires more precision than usual farm practices in the Southeast, Dr. Sayre believes it will be as easy for farmers to learn to produce cotton cheaply as it will be for them to learn to produce livestock efficiently. Moreover, cottonseed will provide a source of high protein feed in livestock expansion.

Finally, the production of better cottons at lower costs will release land, labor, and capital for other enterprises to be fitted around the cotton crop and promote balanced and efficient farming systems.

Simonson Takes Part in Caribbean Soil Science Conference

Tremendous interest in U. S. soil survey techniques was noted by Dr. Roy Simonson (SS) when he served as chairman of the committee on soil surveys at the recent meeting of soil scientists in Puerto Rico.

The conference, sponsored by the research council of the Caribbean Commission, brought together representatives from the British, Dutch, French, and American territories and several Latin American countries. Most of the business was conducted in committee meetings where reports were drawn up for review in a plenary session. The proceedings will be published by the Caribbean Commission.

As a participant in one of a series of seminars, Dr. Simonson outlined a proposal for soil classification research in the region. He suggested a 6-point plan. Under this, each country or territory would: (1) prepare a general soil map from data available; (2) make detailed maps in sample areas; (3) refine the general map on the basis of findings in the sample areas; (4) develop productivity ratings and prepare keys and groupings as aids in identification; (5) go ahead with the surveys in other areas as funds and personnel permit; and (6) conduct research to characterize soils and develop management practices.

Ray C. Roberts (SS), now in charge of work for the Far Western States but formerly in charge of soil survey research in Puerto Rico, discussed techniques and problems of that area. The Puerto Rican report is the first to be published. Work is in progress in the British West Indies and Suriname.

W. W. Pate (Soils) and Mason Hein (FC&D), who were in Puerto Rico to confer with collaborators on a Research and Marketing project on erosion, also attended several sessions of the conference.

Soybean Workers Confer at Urbana, Ill.

Plans to catalog and preserve all soybean germ plasm now available in the United States and to test systematically and preserve all soybean introductions were drawn up at meetings at the U. S. Regional Soybean Laboratory March 7-8.

Dr. M. G. Weiss, in charge of soybean research for this Bureau, points out that a large pool of germ plasm has proved extremely valuable as a reserve for genes resistant to the ever-increasing list of pathogens attacking soybeans.

The meetings--the first in two years for soybean agronomists and collaborators and the first in four years for pathologists in the North Central region--served as a clearing house for the consolidation of variety tests, the release of new varieties, and the planning of fundamental research.

One pathologist and one agronomist from the Southern Region attended the meetings to report on current work in the South.



### Harlan Offers New Concept of Plant Gene Centers

The idea that a plant gene center is a museum of archaic types, preserved in the isolation of hidden mountain valleys by the husbandry of primitive people, may apply in some cases but it is by no means the whole story in the opinion of Dr. Jack R. Harlan (FC&D).

Observations made during recent plant explorations in Turkey lead him to suggest that varietal diversity may be found on the plains as well as in the mountains, near to civilization as well as remote from it. He contends that gene centers may be of very ancient or quite recent development. The fundamental characteristic common to all centers is that evolution is proceeding at a rapid pace now.

To support this dynamic concept, Dr. Harlan cites evidence of small, intensely active gene centers of wheat, corn, and legumes, which he observed during recent plant explorations in the 63 provinces of Turkey.

He found gene centers of wheat in Thrace, the Kars basin (a broad valley near the Russian frontier), and the upper Mesopotamian plain.

The Thracian wheat fields, he noted, apparently consist of composite populations involving a wide variety of wheat forms and--to some extent--the wild relatives. Many fields include several dozen distinguishable types as well as gradations and intermediates between the principal ones. The roadsides, weedrows between the fields, and waste places of every sort are carpeted with various relatives of the wheats.

Dr. Harlan points out that Thrace is not an isolated region. The gene centers occur only a few miles from a populous cultural and trading center. The farming there is as highly developed as anywhere in Turkey with the exception of the new government-operated mechanized farms.

The diverse populations of wheat in each of the gene centers--Thrace, the Kars basin, and the Mesopotamian plain--are quite different from each other and the wild relatives are peculiar to each region.

Dr. Harlan reports that certain New World plants exhibit the same type of variation in Turkey. For example, a true micro-center of evolutionary activity in corn appears to exist along the Black Sea Coast and in central Anatolia. Common New World beans, also far removed from their center of origin, are represented in Turkey by such a remarkable array of forms and types that it seems unlikely any considerable proportion of them were directly or indirectly introduced.

Evidence that some areas were rich not only in the diversity of crops grown but in the varietal wealth of those species became quickly apparent as he visited the different regions. Other areas were poor in both respects.

Dr. Harlan says that cytogenetic analysis is needed to confirm the existence of small, active, gene centers in the region. The most satisfactory attack, in his opinion, would be a survey of the plant populations in the fields of Turkey. But in lieu of that, he believes considerable evidence can be obtained from the sizeable number of plant populations he collected in Turkey and sent to the Division of Plant Exploration and Introduction.

Recent Findings in Soils Research

Sixteen collaborators of the Bureau Soil and Fertilizer Laboratory representing State experiment stations in each of the four regions of the United States were given a round-up of research findings for the past year at the third annual meeting at Beltsville in March. Here are some of the highlights:

H. T. Hopkins and S. B. Hendricks reported that an initial application of as little as 25 pounds of technical DDT per acre in Sassafras and Chester soils retarded the growth of Black Valentine snapbeans in the third season. Off flavor occurred in Red Warba potatoes the third season following an initial application of technical benzine hexachloride to Sassafras and Chester soils at levels of 50 and 500 pounds an acre. However, no flavor was detected in potatoes grown in New Jersey muck treated with 500 pounds of BHC an acre. It is planned to use para para prime DDT containing radioactive carbon ( $C_{14}$ ) to obtain exact measurement of persistence when the new greenhouse for radioactive studies is opened.

Dr. Frank Parker, head of the Soils Division, announced that the greenhouse will probably be in operation by June. Facilities will provide about 12,000 feet of floor space. One wing of the Soils and Fertilizer building has been modified to carry on radioactive research at low activity levels. Changes have also been made at the small plant here at Beltsville where radioactive isotopes are incorporated into various types of fertilizer. Approximately 30 research workers, either full or part time, are now engaged in these investigations at Plant Industry Station.

Reporting on a study of radiation damage to plants treated with radioactive phosphorus, R. F. Reitemeier and J. M. Blume said the lowest level at which damage was observed was well above the specific activity of radioactive fertilizer manufactured here for field tests. Possibility of damage in water culture experiments appears somewhat more likely but conditions necessary to avoid this have not yet been established.

Further evidence that radium and uranium do not stimulate plant growth comes from experiments by Reitemeier and R. S. Holmes. These show that the addition of radium or uranium to the substrate in sand culture did not affect an increase in vegetative, bloom, or fruit yields of tomatoes, romaine, radishes, stock, or snapdragons.

F. E. Allison offered data to demonstrate there is no significant difference in carbon retention in oxidized and unoxidized soils. This means that the addition of fresh plant materials--shown in recent tracer studies to speed up the release of native soil carbon--does not impair the maintenance of soil organic matter and there is no need to revise the present recommended practice of using green manures as soil builders.



### Advances in Research on Plant Response to Day-Length

First information on a pigment that holds the key to the mechanism which controls flowering and other phases of plant development is reported by Dr. H. A. Borthwick and Dr. M. W. Parker (F&VC&D) and Dr. S. B. Hendricks (Soils).

This important evidence is basic to further inquiry into the question of why some plants form flower buds only when the days are long, the nights short, and why others require short days and long nights to come into flower.

The new findings are based on research in which a spectroscope was used to isolate narrow wave bands of light of high energy. These were used to irradiate soybeans and other plants known to be sensitive to the length of day.

Data on the absorption of light by these plants indicate that the sensitive pigment is a blue one, related to the pigments of the bile. It is present in extremely low concentrations--below the limit to impart color.

The same pigment or a closely related one is effective in both long-day and short-day plants. The findings suggest that it acts as a catalyst to set in motion the substance (still to be identified) that stimulates flowering. There is strong evidence that the flower-inducing stimulus is transmitted through the plant by living cells.

The results confirm previous findings that a brief exposure to white light of low energy in the middle of the night is sufficient to prevent floral initiation in short-day plants and to promote flowering in long-day plants. It is apparent that the slow dark recovery is the critical phase in the series of reactions that control flowering.

From the studies with the spectroscope comes additional evidence that the plant mechanism known to initiate flowering probably also controls other phases of growth. For example, it may hold the answer to the question why the first internodes of many grass seedlings stop growth and the leaves unfold when the seedlings get above ground.

The response of albino barley seedlings to the day-night cycle shows that the blue pigment--sensitive to photoperiod--occurs<sup>even</sup> when the chlorophyll pigments--effective in photosynthesis--are lacking. This would indicate, say the scientists, that the relationship between the two types of pigments is not a close one.

In a recent paper reporting these studies and other advances in research in photoperiodism, Borthwick, Parker, and Hendricks note that the blue pigment, which their findings show is a link in the photoperiodic reaction in plants, may be related to that controlling animal life. Pterobilin has been isolated from the wings of the cabbage butterfly. Oocyan, a blue pigment in some birds' eggs, belongs to this general class.

Other research has shown the influence of day-length on reproduction in some animals, on the time of molting in birds, and on the hair color and fur quality in mammals. Findings reported in these studies indicate that the stimulus is received by the eye and transmitted to the pituitary glands where the action is controlled. Spectroscopic studies of day-length response in animals are needed to clarify the problem and to show whether the mechanisms for the phenomena in plants and animals are fundamentally alike.



### A Ton of Superphosphate to the Acre

New insight into phosphorus use on sandy soils comes from findings at the Yuma Mesa (Arizona) Soil and Crop Laboratory.

Dr. Charles D. Converse (SMI) reports that the desert soils now being made productive through irrigation yield up to 10 tons of high-quality alfalfa hay per acre with an initial  $P_2O_5$  application of 400 pounds to the acre. This effect can be achieved with a ton of 20 percent superphosphate to the acre. Current results indicate that smaller amounts drilled in bands exactly below the seed may be equally effective. Special equipment is required for the second method.

If the level is established through high applications the first year, no additional phosphate is required the second year and the level can be satisfactorily maintained by applications of only 100 to 200 pounds to the acre in the third and later years.

The finding raises the question--says Dr. R. Q. Parks (SMI), project leader in this research--whether an initial heavy application of superphosphate together with subsequent light maintenance treatments may not be more efficient in still other soils than present practices of  $P_2O_5$  fertilization.

### Potomac Division, APS, Holds Annual Meeting at Beltsville

An address, "Science in Human Affairs," given by Dr. E. C. Stakman at the dinner session, was the high point in the seventh annual meeting of the Potomac Division, American Phytopathological Society at Plant Industry Station March 9-10.

Dr. Stakman scouted the criticism that science has gone too far and that a moratorium in scientific endeavor is desirable. Instead, he said, there is need for greater advances in pure and applied science if society is to continue to progress. He stressed the opportunity and responsibility for broad public service by scientists. A broad understanding of scientific principles and spirit is the safeguard against possible misuse of scientific knowledge, he said.

The two-day program included 34 papers and three special laboratory demonstrations. In the business session members voted to ask for resumption of publication of the Journal of Agricultural Research.

Of an even 100 members in the Potomac Division, 60 are from this Bureau, 8 are from other USDA Bureaus, and 32 are from research institutions in six neighboring States, extending from New Jersey to North Carolina. The Division of Fruit and Vegetable Crops and Diseases has the largest representation in the Bureau--23. Next is Mycology and Disease Survey with 10 members. There are 8 from Cereal Crops and Diseases, 7 from Forest Pathology, and 12 members from eight other Divisions.

### Prepackaging Calls for Refrigeration

Although prepackaging of fruits and vegetables at the farm shipping point offers obvious advantages in the reduction of shipping costs and utilization of wastes on the farm, there are many problems to be solved before prepackaging can be widely recommended.

Reviewing some of these problems at the winter meeting of the Southern Association of Science and Industry, Harold A. Schomer (F&VC&D) pointed out that:

The package itself offers no means of improving the quality of its contents. In all perishable commodities, quality declines continuously after harvest. The best handling methods only slow down the rate of decline.

Studies made the past two years under the Research and Marketing Act and in cooperation with the Dickman Farms, Ruskin, Fla., highlight the importance of adequate refrigeration at every step along the way from the time the produce is harvested until it is sold to the consumer.

For example, packaged broccoli remained a good green color for 15 to 20 days when held at 40° F. or below but turned yellow in 2 or 3 days at 70°. Sweet corn lost sugar content at the rates of 3.5 percent at 32°, 20.8 percent at 50°, and 59.4 percent at 86° during the first 24 hours after picking.

Loads of prepackaged sweet corn delivered in New York at temperatures in the 40's were graded as good to very good in quality but those delivered at temperatures above 50° were inferior.

In tests so far, chemical treatments of various types appear to offer very little benefit. Dips in ascorbic, citric, or hydrochloric acid did not prevent discoloration in corn and cauliflower. Instead, these solutions accumulated great numbers of microorganisms, which served as sources of inoculum.

Chlorine used in the hydrocooler water--where the vegetables were precooled immediately after harvest--did not completely sterilize the surfaces of the vegetables but reduced the microorganism count and held it to a reasonable minimum. Approximately 100 parts per million of chlorine gave as satisfactory results as higher concentrations.

In general, the results show all packages should be perforated to allow for gaseous or air exchange. Normal leaks through seams or poor seals will not provide sufficient ventilation to prevent fermentation. In turn, off flavors and colors soon develop when the packaged vegetables are held at high temperatures.

Even with care, some products can be packaged more successfully near the terminal than at the distant farm market. For example, tomatoes need to be ripened to a marketable stage before they are packed. Otherwise they ripen unevenly and make an unattractive package. Also they may develop considerable decay in the two or three days required to put them into retail channels.

For continuous growth of the prepackaging industry, Mr. Schomer points out marketing facilities must keep pace. At present the majority of wholesalers and retail stores do not have refrigeration facilities to adequately handle a line of prepackaged produce.



### Tung Trees Respond to Magnesium

An effective treatment for magnesium deficiency--a serious problem in orchard soils in many parts of the country--is reported by Dr. Matthew Drosdoff and Dr. Felix S. Lagasse (F&VC&D) from studies of tung nutrition at Gainesville, Fla.

The treatment consists of applications of either ground dolomite plus sulfur or of epsom salts plus gypsum. This is applied to the soil around the trees. Analyses of the leaves following these applications show substantial increases in both magnesium and calcium. Subsequently the trees produce increased yields.

In the Blanton fine sand where these tests were made, the epsom salts plus gypsum had little or no effect on soil acidity (ranging originally between 5.0 and 5.7 pH). The dolomite plus sulfur treatment lowered the pH value by about .75 of a pH unit. Dolomite alone did not increase yields but raised the pH value by about .75.

The long-term studies on nutrient deficiencies of tung trees indicate that an imbalance of potassium and magnesium in which there is an excess of potassium stimulates top growth and curtails root growth. This severely damages the root system and impairs its ability to absorb applied magnesium. The studies show, for example, that 5-year treatments of soluble magnesium will not bring about complete recovery in tung trees suffering from a severe magnesium deficiency.

### Trees and Shrubs for Southern Plains Farm Homes

More than 750 farm homes in the 5-State area served by the Southern Great Plains Field Station, Woodward, Okla., have been used for test plantings of trees and shrubs in the long-term experimental program set up in 1931 to find species adapted to that dry-land area.

E. W. Johnson, in charge of the program, reports that since 1931 over a quarter of a million trees and 150,000 shrubs and vines have been distributed. In the cooperative plantings established in 114 counties in the region, each has been planned for a particular site and for farmstead protection rather than as shelterbelts or for crop protection.

The most useful species in a major portion of the area--these results show--are red cedar, Austrian pine, ponderosa pine, Rocky Mountain juniper, single-seeded juniper, parvifolia elm, Chinese elm, and smooth honey locust. Limited use can be made of Arizona cypress, Chinese arborvitae, shortleaf pine, loblolly pine, Scotch pine, Arizona ash, green ash, American elm, eastern hackberry, cottonwood, sycamore, Chinese jujube, osage orange, Russian mulberry, and Chinese pistache. From the research have come an exceptionally good selection of smooth honey locust and several satisfactory selections of parvifolia elm, a hardy Arizona cypress, and a vigorous selection of red cedar.

### Progress in Research on Rubber

Returning recently from a 6-weeks inspection trip to rubber projects in California, Texas, and Mexico, Dr. R. D. Rands, head of Rubber Plant Investigations, reports that vigorous inter-specific hybrids between the guayule rubber shrub and the wild tree-like relative (Parthenium stramonium) have given 50 percent increases in rubber yield per acre.

Texans are studying these hybrids as a possible peacetime crop for marginal drylands. However, USDA research is aimed primarily at improvement of guayule to make it a better supplement to the national rubber stockpile.

The Mexican government is encouraging expansion of Hevea rubber acreage in the southern states of Tabasco and Chiapas. Three specialists from this Bureau are stationed there to give technical assistance.

On a two-months trip to field stations in Guatemala, Costa Rica, Colombia, Haiti, and Puerto Rico, Dr. M. N. Walker (RPI) observed research carried on by cooperating government agencies and private companies. Basis of these plantings is the three-component or "sandwich" tree in which high yield and leaf blight resistance are combined in the same tree by a double budding technique. Improvement in nursery management and field establishment of these trees has reached a stage that the plantings can now be developed economically. Commercial plantings are being expanded.

### Noted Mycologist Studying Beltsville Collections

Dr. Franz Petrak, mycologist of the Natural History Museum of Vienna, is spending a year in the Division of Mycology and Disease Survey under a grant from the American Philosophical Society.

Dr. Petrak is the founder and editor of *Sydowia*, leading mycological journal of Europe. He has long been known as an outstanding student of the taxonomy of the Ascomycetes and their imperfect stages (a group of fungi, many of which are directly concerned as agents of plant disease). He has written several books and an extensive series of papers in this field.

While at Beltsville, Dr. Petrak will study both determined and undetermined material in the mycological collections as a part of his plan to prepare a monograph on the Ascomycetes. Preliminary studies of the collections made by C. L. Shear and N. E. Stevens in the Hawaiian Islands in 1928 have already yielded many previously undescribed species.

### Kushman and Johnson to New Assignments

L. J. Kushman (F&VC&D) has been transferred from Beltsville to Meridian, Miss., where he will conduct investigations on handling, transportation, and storage of fruits and vegetables. This work was formerly handled by Dr. J. M. Lutz, who is now stationed at the Red River Valley Potato Research Center, East Grand Forks, Minn.

Howard B. Johnson succeeds A. L. Ryall as leader in the handling, transportation, and storage investigations with Texas fruits and vegetables, with headquarters at Harlingen, Texas.



Jones Returns from Mission to Asia

Jenkin W. Jones, principal agronomist in charge of rice investigations (CC&D), returned March 29 from a 10-weeks trip by air to Asia where he visited several countries as agricultural advisor to the Southeast and South Asia Food and Trade Mission.

The mission met with government officials representing agriculture, commerce, and industry in Bangkok, Siam; Rangoon, Burma; Calcutta, New Delhi, Madras, and Bombay, India; Karachi, Pakistan; Colombo, Ceylon; Singapore, Malaya; Tokyo, Japan; Seoul, Korea; and Hong Kong and Okinawa.

During his stay in Rangoon Mr. Jones also attended the International Rice Commission Conference and the Rice Breeders Conference, which were in session from February 1-12.

Notes from USDA Graduate School Lecture Series at Beltsville

Point Four--President Truman's proposal that this country give technical and economic assistance to help underdeveloped countries increase food and industrial production--holds the long-term answer to this nation's farm surplus problem, according to Dr. Fred J. Rossiter, associate director of the Office of Foreign Agricultural Relations.

There is no question, he said, that countries with high standards of living make the good customers. Unproductive countries buy little abroad. They seek help rather than trade. But productive countries buy heavily in the world market. He observed that the Point Four Type of program is not new. It has been carried on in Latin America for many years.

Dr. Rossiter said the problem of coordinating domestic measures that protect U. S. producers with programs that promote world trade has again become a crucial point in this nation's foreign policy. Price supports tend to price agricultural commodities out of foreign markets. If the countries of Europe had dollars to pay, they could use all of our agricultural surpluses except cotton. On the other hand, subsidies to permit other nations to buy these surpluses would create resentment in agricultural producing countries that also have products to sell. Dr. Rossiter believes that trade agreements under the program initiated in 1934 when international trade was at a disastrously low level are still very much worth while.

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How the Rural Electrification Administration has helped raise standards of farm living, increase efficiency, and add immeasurably to the taxable wealth of this country was outlined in the talk by Administrator Claude R. Wickard.

In 1935 when the agency was set up by executive order, only one farm in 10 was electrified. Today more than four out of five farms in this country are wired for electricity. Most of the credit for this advance goes to REA. These accomplishments, says Mr. Wickard, reflect genuine need which the people were willing to work hard to satisfy. Established as a loan program, it appears that REA repayments will set a pattern for financial stability in the utility industry. So far the agency has foreclosed on only one loan.

### L. M. Pultz Heads Research in Drug and Special Crops

Dr. Leon M. Pultz assumed leadership of research on the culture, analysis, and improvement of medicinal and special crops March 31. He succeeds A. F. Sievers, who retired.

Dr. Pultz, 46, is well known for his research in plant physiology. During the past 10 years he has been at the University of Arizona where he was first head of the botany department and later head of the horticulture department and horticulturist on the staff of the State Experiment Station.

Before that he was employed for about 10 years by USDA, in the beginning to make studies in the improvement of sugar beet seed production. Later he worked with L. W. Kephart in weed investigations. His basic research on the physiology of bindweed contributed materially to the establishment of improved practices for the control of this noxious weed.

Since returning to the Bureau in May 1949, Dr. Pultz has conducted production studies of canaigre.

He is a native of South Dakota and did his undergraduate work at South Dakota State College. He received his doctorate from the University of Chicago in 1929.

### New Device Useful in Fertilizer and Seed Tests

A nomogram to facilitate quick checks on calculations in applying fertilizer or seed to small experimental plots has been developed by Walter C. Hulburt (FM).

The device can be used to: (1) fit row lengths to area available; (2) find size of plots in square feet or fractions of an acre when only dimensions are known; (3) check the amount of material weighed out for plots; and (4) check rates of machine application.

The nomogram is described in No. 99 of the mimeographed information series published by the Divisions of Agricultural Engineering. The description includes a graph and detailed suggestions for its use.

### Farmhouse Plans for the South

Four house plans developed with special reference to needs of farm families in the South are announced in Information Series No. 100. The plans were prepared by the Division of Farm Buildings and Rural Housing in cooperation with the Alabama Polytechnic Institute, North Carolina State College, and the Mississippi Extension Service. Complete working drawings are available through the Plan Exchange Service.



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\* RETIREMENTS \*  
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Arthur F. Sievers (TM&SC) retired March 31 after 43 years of service. These have been devoted to research on the culture and analysis of plants producing drugs, poisons, insecticides, essential and fixed oils, perfumes, and related products. For the past 25 years he has had the major responsibility for these investigations.

Mr. Sievers, 65, is a native of New Holstein, Wisc. He entered the Department as a specialist on medicinal plants in 1907, shortly after his graduation from the University of Wisconsin, but his activities have also included researches on many other special economic plants. From these investigations have come a tremendous fund of knowledge on the soils, climate, and cultivation best suited for such plants and advances in their harvesting, processing, and marketing.

In recent years, under Mr. Sievers' direction, it has been demonstrated that two native crops--sumac, which grows wild in much of the United States, and canaigre, a plant native to the Southwest--hold promise as sources of tannin. A project has been set up to develop improved varieties of these plants and to investigate the possibilities of growing them as commercial crops. Working with Mr. Sievers, agricultural engineers have developed improved methods for harvesting special crops. One contribution is a machine for harvesting pyrethrum, the plant source of the widely used insecticide.

Bulletins, circulars, and articles written by Mr. Sievers include a publication describing more than a hundred wild plants collected in this country for use in medicine. A recent Farmers' Bulletin on the growing of drug and condiment plants presents a comprehensive discussion of these plants that can be grown in the United States, their range of adaptation, the cultivation and harvesting practices recommended, and the uses of and demand for the products from such crops. His technical bulletin on the methods of extracting volatile oils from plant material and the production of such oils in the United States has been an important source of information for 20 years.

Mr. Sievers is a member of the American Chemical Society, the American Pharmaceutical Association, the American Association of Economic Entomologists, and the Washington Botanical Society. He and Mrs. Sievers will continue to make their home at 1806 Jackson St., N. E., in Washington.

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Joseph Leo Mahoney, 58, retired March 31 as administrative assistant in the Division of Rubber Plant Investigations after nearly 34 years of service. A native of Massachusetts, Mr. Mahoney came to the Department as a clerk in the corn investigations unit in 1916.

Radio Broadcasts by Bureau Scientists

- March 25 - "What's New in Gardening," by Dr. V. R. Boswell (F&VC&D) in the National Farm and Home Hour over the NBC network.
- April 1 - "Day and Night in the Life of Plants," by Dr. H. A. Borthwick and Dr. M. W. Parker (F&VC&D) in the American Farmer program over the ABC network.
- April 8 - "Science Goes After the Weeds," by Dr. R. L. Lovvorn (Weed Control) in the American Farmer program over the ABC network.
- April 8 - "Progress in Easter Lily Research," by Dr. S. L. Emsweller (F&VC&D) in the network farm show over CBS

Recent Bureau Press Releases

Copies of the following releases may be obtained from Press Service, Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

<u>Date</u>	<u>Subject</u>
March 30	USDA study gives new facts on plant response to day-length - USDA 767-50
March 30	A. F. Sievers, USDA drug crop authority, retires - USDA-785-50
April 3	L. M. Pultz heads research in drug and special crops - USDA 813-50
April 6	Sensitive strawberry a kind of guinea pig - USDA 855-50
April 10	Stakman talks of science and what man needs - <u>USDA</u>
April 10	Two Beltsville scientists called pioneers in fungi change - <u>USDA</u>
April 10	Germs make potato slices grow - <u>USDA</u>
April 20	Spinning proves a key to fresher spinach - USDA 981-50
April 21	Seedless centipede grass made to seed by science - USDA 994-50
April 23	Millions up-to-date on weed control - C.S. 831-50
April 24	Stakman talks of science and what man needs - <u>USDA</u>
April 24	Recent findings on potato handling and storage covered in digest - <u>USDA</u>
April 24	New plant preservation - <u>USDA</u>
April 24	Department has 68 percent of Potomac Phytos - <u>USDA</u>
April 26	Many vegetables succeed in Northern Great Plains - USDA 1028-50
April 30	How long's a nematode? - C.S. 905-50



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Farmers' Bulletin 1896 (revised) - Care of Damaged Shade Trees

Technical Bulletin 998 - Seasonal changes in Florida Tangerines

Technical Bulletin 1004 - Further differentiation of Genetic Factors in  
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Technical Bulletin 1005 - Anthracnose of Cereals and Grasses

Circular 831 - Vegetable Conditions under Dry-Land Conditions at Mandan, N.D.

Circular 835 - Grain Bin Requirements

Miscellaneous Publication 228 (revised) - Market Diseases of Fruits and  
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